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## PROVISIONAL SPECIFICATION.

## Improvements in High Tension Electric Fuses.

We, FERGUSON PAILIN LIMITED, of Buckley Street, Higher Openshaw, Manchester, a British Company, and GEORGE PAILIN, a British Subject, of the Company's address, do hereby declare the nature of this invention to be as follows:—

This invention relates to high tension oil immersed electric fuses. The production of a satisfactory fuse presents considerable difficulties, as the strong cooling action of the oil upon the fuse wire necessitates the use of very fine wire with consequent difficulties in supporting a sufficient length thereof for operating at high tension in a satisfactory manner. The use of a long fine fuse wire with high tension currents also results in the formation of corona effects which are detrimental to the permanency of the wire.

The object of our present invention is to provide an improved oil immersed electric fuse for high tension current which obviates or minimises the difficulties before referred to.

In accordance with our invention, the long length of fine wire to serve as a fuse is provided in the form of the filament of what is equivalent in general construction to an electric lamp of the known tubular double ended type, which gives the necessary long path between its terminals for high tension fuse purposes. Such a lamp construction provides a fine wire of considerable length which is adequately supported and which will not

require to be handled when placed into service as a fuse. The glass tube (which does not require to be under vacuum or gas filled as in lamp construction) is perforated at one or more places so as to allow free access of oil to the wire.

To prevent the formation of corona upon the wire, we provide an electrostatic shield around the lamp tube. The shield is made of an insulating material, such as that known under the Trade Mark Bakelite, in which are metal sleeves insulated from one another by the material. Two sleeves may, for example, be connected to the terminals of the lamp or fuse and extend in the insulating material partly round the fuse. An intermediate sleeve or sleeves overlap the two end sleeves, being inside the one and outside the other, but spaced therefrom by the insulating material between. Upon rupture of the fuse wire, the shield acts as a condenser insulator.

The length of the filament of the lamp and its fineness are chosen to suit the current and voltage of the high tension circuit.

It will be understood that whilst for convenience of explanation, we have referred to the fuse wire as a tubular lamp filament, the complete fuse will be made for the purpose for which it is intended but on lines similar to those used in lamp manufacture.

Dated this 24th day of May, 1932.

MARKS & CLERK.

## COMPLETE SPECIFICATION.

## Improvements in High Tension Electric Fuses.

We, FERGUSON PAILIN LIMITED, of Buckley Street, Higher Openshaw, Manchester, a British Company, and GEORGE PAILIN, a British Subject, of the Company's address, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to high tension oil immersed electric fuses. The produc-

tion of a satisfactory fuse for low fusing currents presents considerable difficulties, as the strong cooling action of the oil upon the fuse wire necessitates the use of very fine wire with consequent difficulties in supporting a sufficient length thereof for operating at high tension in a satisfactory manner.

The object of our present invention is to provide an improved oil immersed electric fuse for high tension current

which obviates or minimises the difficulties before referred to.

Our invention comprises a high tension oil immersed electric fuse in the form of a tubular double ended type electric lamp with the glass tube perforated to allow of free access of oil to the lamp wire or filament, the lamp being removable and replaceable as a unit.

In the accompanying explanatory drawing which illustrates our improved fuse, the double ended lamp *a* is held in suitable clips *b*, *c* at its opposite ends, said clips being upon caps *d* secured to the reduced ends of an insulating shield *e* which may be adapted in known manner to prevent the formation of corona upon the lamp wire *f* which constitutes the fusible element. The lamp *a* is therefore readily removable from and replaceable within the shield *e* as a unit. In the construction of lamp illustrated, the wound spiral wire or filament *f* is supported by wires *f*<sup>1</sup> from a glass beam *f*<sup>2</sup> which is itself supported by spring shock absorbers *g* from the lamp caps. We make no claim to the particular method of supporting the wire or filament.

The glass bulb around the fuse wire or filament is perforated at *h* to allow free access of oil to the fuse wire.

The length of the filament of the lamp and its fineness are chosen to suit the current and voltage of the high tension circuit.

A double ended tubular lamp provides

in a very convenient form the necessary long path between its terminals for high tension fuse purposes. It provides also a fine wire of considerable length which is adequately supported and which will not require to be handled when placed into service as a fuse, as is the case with the known forms of fuse consisting of a wire removably attached within an oil-containing liner.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A high tension oil immersed electric fuse in the form of a tubular double ended type electric lamp with the glass tube perforated to allow of free access of oil to the lamp wire or filament, the lamp being removable and replaceable as a unit.

2. A high tension oil immersed electric fuse comprising an insulating shield having caps thereon at its opposite ends with clips upon the cap to support, within the shield, a tubular double ended type electric lamp with the glass tube perforated to allow of free access of oil to the lamp wire or filament which constitutes the fusible element.

3. The improved high tension oil immersed electric fuse, substantially as described and as illustrated.

Dated this 18th day of May, 1933.

MARKS & CLERK.

[This Drawing is a reproduction of the Original on a reduced scale.]

